



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/652,654	08/28/2003	Craig Webb	033837-003	1905
21839	7590	03/30/2005		EXAMINER
BURNS DOANE SWECKER & MATHIS L L P POST OFFICE BOX 1404 ALEXANDRIA, VA 22313-1404			TANG, SON M	
			ART UNIT	PAPER NUMBER
			2632	

DATE MAILED: 03/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/652,654	WEBB ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Son M Tang	2632

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
 THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 28 August 2003.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-28 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-28 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | Paper No(s)/Mail Date: _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/4/04</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1, 19, 23, 25 and 27 recites the limitation "causing the averaged signal to drop to a zero value after a few second of no signal" which appears should have been causing "the *sum* to fall to zero" according to page 9, line 18 of the specification. Examiner treats the claims as disclosed in the specification in the following prior art consideration.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 5-13 and 15-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over McEvilly [US 4,516,206] in view of Agre et al. [US 6,208,247; Agre], and further in view of Caillat et al. [US 5,101,195; Caillat].

Regarding to claims 1, 9, 23, 25: McEvilly discloses an apparatus for detecting earthquake generated P-wave comprising a signal processing means (WORKERs) for sampling the passed signals and performing an automatic real-time offset zeroing function (col. 6, lines 35-57, wherein long-term average (LTA) is the ongoing mean of the averaged signals over

successive periods of time taken as the STARTING point, or zero point, in detecting short-term average (STA) signal rises above a predetermined level “specified constant”), McEvilly lacks in specifically discloses the integrated sum signal. Agre teaches calculating the integrated sum 80 of the signals in the sampling time window to compare to a threshold as confirmation of seismic signal presence to produce accurate detection [see Fig. 4, col. 8, lines 43-55]. Since the integrated sum calculates the sum of signals over the time window, if there are a few seconds of no signal corresponding to that time window of few seconds, the integrated sum would drop to zero, i.e. the sum of zeros is zero. It would have been obvious of one having ordinary skill in the art at the time of the claimed invention, to combine the integrated sum of Agre into the processing of McEvilly, for the advantage of more accurate.

McEvilly concentrated on the processing of the earthquake p-waves output signals without specifying the mounting structure of a sensor and signal conditioning used, while Caillat teaches the known use of earthquake detector 20, housed in a housing 22 and mounted to a building supporting structure [col. 3, lines 8-20], which includes amplifier 108, filters 184 [as cited in Fig. 11, col. 7, lines 1-8] as a specific sensor structure and signal conditioner sensing and separating P-wave signals from noise. It would have been obvious of one having ordinary skill in the art at the time of the claimed invention, to use the known sensor structure and signal conditioner of Caillat in McEvilly and Agre to implement the signal input for processing for the improved noise immunity.

Regarding to claims 2-3, 5-6, 12-13 and 15-16: McEvilly, Agre and Caillan disclose all the limitation as described in claim above, Caillan further teaches the vibration sensor includes a piezo-electric and a cantilevered beam 132 having a weight 140 (predetermined mass)

Art Unit: 2632

on its free end 138 (unsupported distal extremity) and a proximal extremity 136 affixed to the housing [see Fig. 8 col. 5, lines 5-12], except for specifically teaches a thin-film in piezoelectric sensor. It is known in the art that thin-film is compact and flexible, therefore it would have been obvious of one having ordinary skill in the art at the time the invention was made to use thin-film in piezoelectric sensor for the purpose of save space.

Regarding to claims 7 and 17: McEvilly, Agre and Caillan disclose all the limitation as described in claim above, Caillan further teaches said housing includes a printed circuit board 24 including electrical traces interconnecting said sensor means, said signal amplifying and filtering means and said processing means [see Fig. 7, col. 3, lines 64-67].

Regarding to claims 8 and 18: McEvilly, Agre and Caillan disclose all the limitation as described in claim above, Caillan teaches sensor housing 22, but not specifically teaches that housing is an airtight enclosure, since the sensor uses to detect seismic force it maybe mouth at outside of the building, which it exposed to air and rain condition. Therefore, it would have been obvious of one having ordinary skill in the art at the time the invention was made, to have an airtight housing to prevent sensor damage from moisture.

Regarding to claims 11, 24 and 26: McEvilly, Agre and Caillan disclose all the limitation as described in claim above, McEvilly's system discriminates the p-wave quality amplitudes and the arrival time PT, except for specifically discloses that if p-wave has a magnitude of first Richter scale range, detecting a second p-wave if it fall in a second Richter scale range again. Since, Richter scale range uses to measure earthquake magnitude, and the P-wave amplitude is relative to an earthquake threshold, that uses to determine earthquake, therefore it would have been obvious of one having ordinary skill in the art to recognize that

Richter scale range also uses to measure P-wave amplitude, and if P-wave detected above threshold, one would continue to monitor for the next p-wave amplitude for more accurate.

Regarding to claims 21-22: McEvilly, Agre and Caillan disclose all the limitation as described in claim above, Caillan further teaches an user interface for allowing modification of the ground acceleration and output trigger level [col. 6, lines 57-66], but lacks in specifically modifying processing filter value. In the process of detecting earthquake all components output are relative with each other, therefore, it would have been obvious of one having ordinary skill in the art at the time of the claimed invention, to recognize that to modify the output trigger level would effect all other components value includes processing filter value.

Regarding to claims 19-20: The claimed method steps are interpreted and rejected as rejection stated above.

5. Claims 4, 14 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over McEvilly in view of Agre et al. and Caillat et al. and further in view of Guindi et al. [US 6,356,204; Guindi].

Regarding to claim 27: McEvilly discloses an earthquake detection system comprising:

- a plurality of P-wave detection stations (WORKER) [4, 6 and 8] disposed in locations remote from each other and communicatively connected together [see Fig. 1-3];
- a processing means (WORKERS) for sampling the passed signals and performing an automatic real-time offset zeroing function (col. 6, lines 35-57), wherein long-term average (LTA) is the ongoing mean of the averaged signals over successive periods of time taken as the

STARTING point, or zero point, in detecting short-term average (STA) signal rises above a predetermined level “specified constant”), McEvilly lacks in specifically discloses the integrated sum signal. Agre teaches calculating the integrated sum 80 of the signals in the sampling time window to compare to a threshold as confirmation of seismic signal presence to produce accurate detection [see Fig. 4, col. 8, lines 43-55]. Since the integrated sum calculates the sum of signals over the time window, if there are a few seconds of no signal corresponding to that time window of a few seconds, the integrated sum would drop to zero, i.e. the sum of zeros is zero. It would have been obvious of one having ordinary skill in the art at the time of the claimed invention, to combine the integrated sum of Agre into the processing of McEvilly, for the advantage of more accurate.

McEvilly concentrated on the processing of the earthquake p-waves output signals without specifying that WORKER has a pair of detectors, the mounting structure of a sensor and signal conditioning used, while Caillat teaches the known use of earthquake detector 20, housed in a housing 22 and mounted to a building supporting structure [col. 3, lines 8-20], which includes amplifier 108, filters 184 [as cited in Fig. 11, col. 7, lines 1-8] as a specific sensor structure and signal conditioner sensing and separating P-wave signals from noise. And Guindi teaches a station has a pair of detectors [100, 102] structure in spaced apart disposition and simultaneously generate detection signals [see Fig. 6, col. 9, lines 17-25]. It would have been obvious of one having ordinary skill in the art at the time of the claimed invention, to use the known sensor and signal conditioner of Caillat, and pair of sensors of Guindi in the combination of McEvilly and Agre to implement the signal input for processing and enhancing accuracy.

Art Unit: 2632

Regarding to claim 28: McEvilly further discloses a monitoring station 12, communicatively coupled to said detection stations WORKERs and operative to record detection signals in recorder 16 [cited Fig. 1, col. 5, lines 18-25].

Regarding to claims 4, 14: Refer to rejection of claim 27 above.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Siems et al. [US 4,072,923], Okada et al. [US 5,962,787], Farnsworth et al. [US 5,625,348], Laymon et al. [US 3,696,369], Korn et al. [US 4,300,135], Zamfes [US 6,373,396], Tate et al. [US 4,628,299] and Hively et al. [US 6,484,132].

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Son M Tang whose telephone number is (571)272-2962. The examiner can normally be reached on 4/9 First Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel J Wu can be reached on (571)272-2964. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
BENJAMIN C. LEE  
PRIMARY EXAMINER

Son Tang